

REMARKS

In the Office Action, claims 1-42 were rejected. By this Reply and Amendment, claims 1, 17, 21, 23-29 and 31 have been amended, claims 5, 20 and 22 have been canceled without prejudice, and claims 1-4, 6-19, 21 and 23-42 remain pending in the present application. All claim amendments are fully supported throughout the specification and figures. No new matter has been added.

Claims 1-3, 5, 14-17, 20, 22, 31-35, 38 and 41 were rejected under 35 USC 102(b) as anticipated by the Conrad reference, US Patent No.: 2,988,323. Independent claims 1, 17 and 31 have been amended to clarify aspects of the present invention, and the rejection is believed inapplicable.

The Conrad reference describes a valve apparatus to control fluid flow between the interior and exterior of a tubular string in a well bore. The valve apparatus includes an inner mandrel 10 telescopically arranged within an outer housing 11 having a lower housing section 13 and an upper housing section 14. (See column 2, lines 47-65). In the Office Action, the Examiner relied on the reference as disclosing "radial flow passages" 34-35, "primary seat" 31 and/or 51-52 and "secondary seat" 54. However, reference numeral 54 is used to label the intermediate peripheral portion of the seal ring in which a "rubber-like" ring 50 is used to form the seal. (See column 7, lines 25-37). Reference numerals 31 and 51-52, on the other hand, are not used to label sealing structures. Rather, reference numeral 31 is used to label a mandrel shoulder positioned to engage the lower end of a sleeve 23 and to shift the sleeve upwardly against a housing shoulder 30. There is no description of mandrel shoulder 31 as a sealing member in the form of a primary or secondary seat. Reference numerals 51 and 52 are used to label steel rings disposed in recesses 53 of rubber-like ring 50. Under pressure, the rubber-like portion 50 deforms steel rings 51 and 52 to reduce space between sleeve 23 and rings 51, 52 so there is no space "through which the rubber seal ring material can pass". (See column 7, lines 51-60). Rings 51 and 52 are not described as forming seals or seats but rather as supports for the rubber-like ring 50.

Accordingly, the Conrad reference fails to disclose or suggest numerous elements of the pending independent claims. For example, the reference does not disclose or suggest a valve assembly having a sealing device with a primary seat and a secondary seat in which one of the primary seat and the secondary seat is formed of a harder material than the other, the "harder material having a hardness of at least 1200 knoops" as recited in amended, independent claim 1. The reference also fails to disclose or suggest a valve assembly having a sealing device disposed between an inner and outer housing and formed of at least two different materials that both form a seal with a choke stop in which a first material has "a hardness of at least 1200 knoops" and a second material is "a deformable material" as recited in amended, independent claim 17. Similarly, the Conrad reference fails to disclose or suggest a method of controlling fluid flow by forming a seal with a primary seat having a material hardness of "at least 1200 knoops" and a secondary seat formed of a material having less material hardness than the primary seat, as recited in amended, independent claim 31. The Conrad reference simply does not disclose or suggest the use of a relatively hard material and a softer material in combination to form an improved seal.

Claims 2-3, 14-16, 32-35, 38 and 41 are dependent claims that ultimately depend from one of the independent claims discussed above. Accordingly, those claims are patentable over the cited reference for the reasons provided with respect to the independent claims from which they depend as well as for the unique subject matter recited in each of those dependent claims.

Claims 1-3, 13-15, 17-22, 31-34, 36, 41 and 42 were rejected under 35 USC 102(b) as anticipated by the Wong reference, US Patent No.: 5,263,683. The rejected independent claims have been amended to clarify aspects of the present invention, and the rejection is believed inapplicable.

The Wong reference describes a sliding sleeve valve for use downhole. The valve comprises a sliding sleeve 46 carried co-axially within housing 14, 18, 36, 42. (See column 5, lines 23-25). Between sliding sleeve 46 and the surrounding housing, a seal 28 is deployed. Seal 28 comprises three upper chevron rings 28a and three lower chevron rings 28b which are illustrated as formed of a rubber or plastic material. (See column 4, lines 59-67; and Figure 4).

Seal 28 also comprises a seal groove 30 containing an uppermost elastomeric o-ring 32 and two polymeric backup rings 34 disposed below o-ring 32. (See column 5, lines 3-10). The reference further describes that backup rings 34 may be eliminated, but if used, the backup rings should be somewhat more compressible than metal so they "can be compressed slightly" between sleeve 46 and housing 18. Thus, the backup rings are able to resist extrusion of seal ring 32 without interfering with proper movement of sleeve 46. (See column 7, lines 55-64). Accordingly, backup rings 34 are not described as a seal seat. Additionally, none of the materials used to actually form seals in the Wong apparatus is described as comprising a relatively hard material, as set forth in the subject claims.

For example, the Wong reference does not disclose or suggest a valve assembly having a sealing device with a primary seat and a secondary seat in which one of the primary seat and the secondary seat is formed of a harder material than the other, the "harder material having a hardness of at least 1200 knoops" as recited in amended, independent claim 1. The reference also fails to disclose or suggest a valve assembly having a sealing device disposed between an inner and outer housing and formed of at least two different materials that both form a seal with a choke stop in which a first material has "a hardness of at least 1200 knoops" and a second material is "a deformable material" as recited in amended, independent claim 17. Similarly, the Wong reference fails to disclose or suggest a method of controlling fluid flow by forming a seal with a primary seat having a material hardness of "at least 1200 knoops" and a secondary seat formed of a material having less material hardness than the primary seat, as recited in amended, independent claim 31. The Wong reference, like the Conrad reference, simply does not disclose or suggest the use of a relatively hard material and a softer material in combination to form an improved seal.

Claims 2-3, 13-15, 18-19, 21 , 32-34 , 36, 41 and 42 are dependent claims that ultimately depend from one of the independent claims discussed above. Accordingly, those claims are patentable over the cited reference for the reasons provided with respect to the independent claims from which they depend as well as for the unique subject matter recited in each of those dependent claims.

Dependent claims 4, 5, 7-13, 21, 23-29, 36, 37, 39 and 40 43 and 66-69 were rejected under 35 USC 103(a) as unpatentable over the Conrad reference. Each of these claims ultimately depends from one of the independent claims discussed above. Accordingly, these dependent claims are patentable over the cited reference for the reasons provided with respect to the independent claims from which they depend as well as for the unique subject matter recited in each dependent claim.

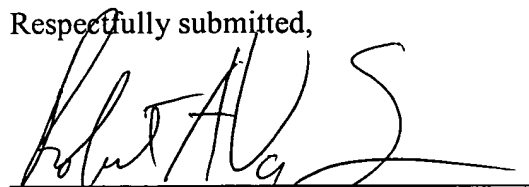
Dependent claims 4, 23 and 37 were rejected under 35 USC 103(a) as unpatentable over the Wong reference. Each of these claims ultimately depends from one of the independent claims discussed above. Accordingly, these dependent claims are patentable over the cited reference for the reasons provided with respect to the independent claims from which they depend as well as for the unique subject matter recited in each dependent claim.

Dependent claims 6 and 30 were rejected under 35 USC 103(a) as unpatentable over the Wong reference in view of the Upchurch reference, US Patent No.: 4,403,659. Claims 6 and 30 ultimately depend from amended, independent claims 1 and 17, respectively. Accordingly, these dependent claims are patentable over the cited references for the reasons provided with respect to the independent claims from which they depend as well as for the unique subject matter recited in each dependent claim. The Upchurch reference provides no additional disclosure that would obviate the deficiencies of the Wong reference.

Dependent claim 33 was rejected under 35 USC 103(a) as unpatentable over the Conrad reference or the Wong reference in view of the Mohn reference, US Patent No.: 5,447,201. Claim 33 directly depends from amended, independent claim 31. Accordingly, claim 33 is patentable over the cited references for the reasons provided above with respect to the independent claim 31 as well as for the unique subject matter recited in claim 33. The Mohn reference provides no additional disclosure that would obviate the deficiencies of the Conrad or Wong references.

The pending claims are believed to be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Robert A. Van Someren', written over a horizontal line.

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